

LISTING OF CLAIMS

Following is a listing of all claims in the present application, which listing supersedes all previously presented claims:

1. (Original) A monolithic ink-jet printhead, comprising:
 - a substrate having an ink chamber to be supplied with ink to be ejected, a manifold for supplying ink to the ink chamber, and an ink channel in communication with the ink chamber and the manifold;
 - a nozzle plate including a plurality of passivation layers stacked on the substrate and a heat dissipating layer stacked on the plurality of passivation layers;
 - a nozzle, including a lower part and an upper part, the nozzle penetrating the nozzle plate so that ink ejected from the ink chamber is ejected through the nozzle;
 - a heater provided between adjacent passivation layers of the plurality of passivation layers of the nozzle plate, the heater being located above the ink chamber for heating ink within the ink chamber; and
 - a conductor between adjacent passivation layers of the plurality of passivation layers of the nozzle plate, the conductor being electrically connected to the heater for applying current to the heater,
- wherein the heat dissipating layer is made of a thermally conductive metal for dissipating heat from the heater, the lower part of the nozzle is formed by penetrating the plurality of passivation layers, and the upper part of the nozzle is formed by penetrating the heat dissipating layer in a tapered shape in which a cross-sectional area thereof decreases gradually toward an exit thereof.

2. (Original) The printhead as claimed in claim 1, wherein the plurality of passivation layers include first, second, and third passivation layers sequentially stacked on the substrate, the heater is formed between the first and second passivation layers, and the conductor is formed between the second and third passivation layers.

3. (Original) The printhead as claimed in claim 1, wherein the lower part of the nozzle has a cylindrical shape.

4. (Original) The printhead as claimed in claim 1, wherein the heat dissipating layer is formed by electroplating to a thickness of about 10-50 μm , and the upper part of the nozzle has a length of about 10-50 μm .

5. (Original) The printhead as claimed in claim 1, wherein the heat dissipating layer is made of a transition element metal.

6. (Original) The printhead as claimed in claim 5, wherein the transition element is nickel or gold.

7. (Original) The printhead as claimed in claim 1, wherein the nozzle plate has a heat conductive layer located above the ink chamber, the heat conductive layer being insulated from the heater and the conductor and thermally contacts the substrate and the heat dissipating layer.

8. (Original) The printhead as claimed in claim 7, wherein the heat conductive layer is made of a metal.

9. (Original) The printhead as claimed in claim 7, wherein the conductor and the heat conductive layer are made of the same metal and located on the same passivation layer.

10. (Original) The printhead as claimed in claim 7, further comprising:
an insulating layer interposed between the conductor and the heat conductive layer.

11. (Original) The printhead as claimed in claim 1, further comprising:
a nozzle guide extending into the ink chamber formed in the lower part of the nozzle.

Claims 12-30. (Canceled).